

Talent versus Effort: Effects of Gender Differences

In Music Education

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Abstract

Teacher expectations have been studied in many different settings. One place where they have not been investigated is music education. 167 psychology students participated in a study designed to put them in the position of a teacher or advisor. They were asked whether they would encourage a male or female student to pursue a career in music. They then rated the importance of talent and effort to that student's success or failure. It was expected that attributions of talent and effort would be different for male and female students. It was found that there are some pattern differences in these attributions.

Talent vs. Effort: Gender Stereotypes in Music Education

Women have historically been underrepresented in many fields. While the number of women in professional music has increased over the last few decades, the 25 largest orchestras still have three times more men than women (Schloesser, 2002). In high schools and colleges, the number of female instructors is little more than half the number of male instructors (Schloesser, 2002). To many people, this may seem counterintuitive given that the arts are a stereotypically feminine subject, however even popular music has long been dominated by men. This study seeks to determine why female students are less likely to pursue a career in music than their male counterparts.

Much research has been done regarding the difference between feminine and masculine musical instruments. Research has shown that people are more accepting of a woman playing a feminine typed instrument, such as a flute, and a man playing a masculine typed instrument, such as a tuba, than if the situations were reversed (Cramer, et. al., 2002). This same line of research has also looked at which instruments fall into these categories of masculine and feminine. Researchers have found consistent trends in the masculinity and femininity of various well known instruments (Cramer, et. al., 2002). Research on gender stereotypes in music controlling for gender type of the instrument is limited. One study (Green, 2002) used open ended interviews to ask teachers and students in elementary schools about the gender differences they see in music. Many different trends were explored in this study including students' instrument preferences and how these preferences were formed. Students' preferences were for stereotypically appropriate instruments, but they also were of the opinion that girls were supposed to play classical music and boys should play popular music. The most interesting thing the teachers said was that the girls work harder and are more cooperative, but the boys are better

and more creative. This was especially true for composition exercises, which is interesting given that composing is the area of music with the least number of female representatives. These elementary school teachers evidently believed that creative genius is a masculine concept (Green, 2002). The students reflected this belief as well. Girls reported having trouble in composition exercises and not liking anything they wrote. Boys reported being more comfortable with composition and having fun while doing it. The boys' high abilities and confidence in composition made them like it enough to get over their worries of being thought of as "sissies" (Green, 2002).

Gender and Teacher Expectations

The link between teachers' beliefs and students' performance has been studied extensively. Beginning with Rosenthal (1967), many researchers have studied the effects of teachers' expectations on student performance. Teacher expectancy effects have been studied in the laboratory, the workplace, and in schools in a number of subjects. To study these effects in a natural classroom setting, Jussim (1989; Jussim & Eccles, 1992) gave students in math classes a survey about their performance in math and how they felt they were doing in relation to the other students. The teachers were then asked to fill out a similar survey about the students. Jussim found a tendency for teachers to attribute female student's success to effort and male student's success to talent. The data of Jussim and Eccles (1992) gives empirical evidence for the trend Green (2002) found in her interviews. He also found, in math, that these attributions of effort to female students were not influenced by the actual amount of work done and improved grades, and had no effect on test scores. When teachers perceive that students are performing highly, the students' self-concepts of math ability improved over the course of the year (Jussim, 1989).

Another component of teacher expectation research is to determine how a teacher's expectation can affect student performance. Teachers unconsciously convey their attributions to students through seemingly benign interactions (Graham, 1991). Pity following failure and praise for success at easy tasks is interpreted by students as a low ability expectation (Graham, 1991). It has also been shown that adults see effort and ability as compensatory; more effort indicates less ability, and more ability indicates less effort (Heider, 1958; Kelley, 1971; Graham, 1991). If girls are perceived as putting in more effort, then their teachers would interpret that as a lack of ability and convey this belief to the student. Being treated as though they have less talent would most likely have an effect on female students' motivation. For math, which is considered a masculine subject, effort is considered more important for girls' success than for boys' success, and ability is considered more important for boys (Bornholt & Moller, 2003). Girls attributed failure in math to lack of ability more than boys did (Bornholt & Moller, 2003).

Music students attribute their successes and failures almost entirely to ability or effort (Asmus, 1986). In a competitive environment, they tend to make more ability attributions, which lowers motivation to work hard. Societal perceptions of music put more emphasis on ability than effort in general (Asmus, 1986). Girls gave higher ratings than boys on the importance of both ability and effort to music success, with ability rated slightly higher than effort (Ligette, 1998). If female students are receiving subtle signs that they have a low level of ability it could lower their motivation to work hard in music because of the emphasis on ability as the most important factor.

Stereotypes

We can find some possible explanations for these attribution biases. Green (2002) proposes that the status of creative genius is perceived as masculine. This would suggest that when boys do well it means they are gifted, whereas when girls do well, it means they are working very hard. This bias is part of the gender stereotype. The content of a stereotype can influence the way people's behaviors are judged (Reyna, 2000). A stereotype can lead people to make different attributions of a person's success or failure. If a teacher believes that people of a certain ethnic background are lazy, then they are more likely to attribute their failure to a lack of studying. Conversely, if the person belonged to a group perceived as hard working, the failure may be attributed to a lack of understanding (Reyna, 2000). Attribution theory (Weiner, 1985) divides attributions people make about behaviors into three dimensions. The cause of the behavior can be internal or external, stable or unstable, and controllable or uncontrollable. In achievement contexts, such as a music class, effort and talent are internal, stable, and controllable or uncontrollable respectively (Wiener, 1985). Music students have been shown to attribute their own success or failure to internal and stable causes much more than external or unstable causes (Asmus, 1986; Ligette, 1998). When a stereotype contains information about a person's abilities, the stereotypical outcome is considered uncontrollable; if the outcome is counterstereotypical then it is attributed to some controllable action (Reyna, 2000). For example, because of the stereotype that girls are low in math ability, a teacher will see a girl's success as a counterstereotypical outcome and make a controllable attribution of high effort. This research is designed to test the gender stereotypes found in music and how those stereotypes affect attribution judgments.

The underlying hypothesis of this study is that music will not be considered a “feminine” subject. If music as a whole were considered a feminine subject, then it would be expected that there would be more women than men in professional music, or at least the numbers would be equal. We will also try to determine if music participation changes a person’s perception of music as a masculine or feminine subject. None of these ideas have been addressed in previous literature. The primary hypothesis is that student gender will affect attributions of ability and effort when evaluating music performance: specifically, there will be more attributions of effort to female students and talent to male students. It is also hypothesized that whether the student succeeds or fails will affect these attributions, so that when female students fail it will be more likely attributed to a lack of talent and when male students fail it will be more likely attributed to lack of effort. We will also test the hypothesis that male students will be generally more encouraged than female students to pursue a career in music.

Methods

Participants

The participants in this study were 167 undergraduate students, 95 % between the ages of 18 and 21. There were 76 female participants and 91 male participants, and 98 had participated in some form of music education. They were recruited through an introductory psychology class and received course credit for their participation.

Design

Participants read vignettes written specifically for this experiment and gave causal judgments about the people in the situations. This experiment was a 2 x (2 x 3) mixed factorial design. The independent variables were: gender of the hypothetical student, outcome of success or outcome of failure, and the domain (math, creative writing, and music with a neutral

instrument). Gender was the between subjects variable, outcome and domain were within subject variables. Math and creative writing were chosen as control variables to test the validity of claiming any differences were caused by gender effects. In pilot testing (n=91, mean age 19), participants were asked to rate the masculinity and femininity of math, creative writing, and a number of instruments. A nine-point Likert scale was used with 1 being feminine and 9 being masculine. The mean rating for math was 5.95, for writing it was 3.89, and for cello it was 4.78. Cello was chosen out of the possible instruments because it had the most neutral rating with the highest rate of recognition.

Participants were put in a position of a teacher or advisor and asked to give a hypothetical student advice about choosing a particular career. After reading the target student's situation they were asked if they would encourage them to pursue that career path on a scale from 1 (definitely yes) to 7 (definitely no). Encouragement was framed as putting some investment into pursuing the subject. For music it was encouragement to purchase an instrument, for math it was encouragement to commit to a major, and for writing it was encouragement to try to publish a story. Then they were told to assume that the target had chosen that career, and imagine the target in both a success and failure situation. They were asked to rate the importance of 1) ability, 2) effort, 3) task difficulty, and 4) luck to the success or failure. Task difficulty and luck were included as filler items to disguise the exact intent of the study and to make the students think about the situation longer; but the dependent variables of interest were ability and effort. The four attribution questions appeared in random order. Participants saw one target student situation per domain and the targets were either all male or all female. Gender of the target was chosen as the between subjects variable to disguise the exact nature of the study and to lessen social desirability effects. The participants were not forced to compare their ratings across

genders, making their possible biases less salient. Afterwards participants were asked to rate the perceived masculinity or femininity of music on a nine-point scale (1= feminine, 9= masculine), without thinking about specific instruments or activities. As a manipulation check, they also rated the masculinity and femininity of writing and math.

Apparatus/ Procedure

The three target situations, one for each domain (see appendix A for a sample situation), were presented to the participants on a computer using MediaLab (© 2004 Empirisoft). The three target situations were presented in random order (see Appendix A for the situations used). The subjects first read the situation, and then rated encouragement. They were then asked to imagine the target succeeded and rate the four attributions in random order. This was repeated with failure (see Appendix B for a sample question). Then they rated the three domains for femininity and masculinity and answered demographic questions. Participants were then debriefed and thanked.

Results

Music Ratings

The first hypothesis was that, ignoring instrument effects, music is not perceived to be a feminine subject. The ratings (on a nine-point scale with 1=feminine) were first analyzed for all subjects using a one sample t-test. Music was given a mean rating of 4.95, which is not significantly below the scale midpoint of 5, $t(1, 166) = -.75, p = .45$. This shows that music is not considered a feminine subject, but it is not masculine either. For those who participated in music the mean rating was 5.02, which is not significantly above neutral, $t(1, 97) = .30, p \leq .76$. The difference between ratings for those who had participated in music and those who had not ($m = 4.84$) was not significant ($p \leq .21$), but could be considered a trend. The standard deviation

for those who had participated in music was smaller than the standard deviation for non-participants ($sd = .673$ compared to $sd = 1.196$) suggesting that music participants were in more agreement about their ratings than non-participants.

Encouragement

There was a significant main effect of domain on encouragement, $F(2, 330) = 25.21, p \leq .000$. Participants were less likely to encourage the target to invest in a music career ($m = 3.31$), than either math ($m = 2.50$), or writing ($m = 2.40$)¹. The effects of target gender were less significant, $F(2, 330) = 1.91, p \leq .15$. Looking at averages, there was no difference in encouragement for music (both genders $m = 3.31$), female targets were more likely to be encouraged in math (female target $m = 2.35$, male target $m = 2.64$), male targets were more likely to be encouraged in writing (male target $m = 2.27$, female target $m = 2.53$). It was discovered through further analysis that there was a participant gender difference in encouragement. In music, there was a marginally significant ($F(1, 163) = 2.56, p \leq .11$) interaction tendency for female participants to encourage a male target more than a female target, and male participants to be more encouraging of a female target. For math, male participants were more encouraging of a female target, and female participants showed gave similar rating to both genders, but this interaction was not significant, $F(1, 163) = 1.30, p \leq .26$. In writing, both male and female participants were more encouraging of a male target, this main effect of target gender was not very significant, $F(1, 163) = 1.58, p \leq .21$. The averages of these ratings are shown in Table 1.

Attributions

Success. For attributions of success to effort, there was a marginally significant main effect of domain, $F(2, 330) = 2.39, p \leq .09$. Effort was considered more important to success in

¹ It is important to remember for this section that the rating scale for encouragement goes from 1 = definitely yes to 7 = definitely no. This would mean that a higher mean indicates less encouragement.

Table 1: Average ratings of encouragement by participant and target gender

	Target Gender					
	Music		Math		Writing	
	Male	Female	Male	Female	Male	Female
Male Participant	3.47	3.13	2.77	2.28	2.22	2.5
Female Participant	3.06	3.49	2.46	2.42	2.36	2.56

Note. These ratings are on a scale from 1= definitely would encourage to 7= definitely would not encourage.

music ($m = 6.32$) than either math ($m = 6.20$), or writing ($m = 6.17$). Attributions of success to ability did not differ for either gender of the target or domain, $F(2, 300) = .18, p \leq .84$. The attributions of success to ability and effort for music were not different from each other or by target gender, $F(2, 330) = .01, p \leq .95$.

Failure. For attributions of failure to ability there was an interaction between domain and target gender, $F(2, 330) = 2.71, p \leq .07$. In all the domains the attribution of failure to ability for female targets was almost equal (math $m = 5.18$, music $m = 5.23$, writing $m = 5.23$). For male targets, there was a significant difference between all three domains with math being highest ($m = 5.54$), music being fairly similar to the rating for female targets ($m = 5.28$), and writing being the lowest ($m = 4.99$) (see Figure 1). For attributions of failure to effort there was a very significant main effect of domain, $F(2, 330) = 44.75, p \leq .000$. The average scores for math were highest ($m = 6.01$), followed by music ($m = 5.35$), with writing being the lowest ($m = 4.87$). These ratings did not vary by gender ($F(2, 330) = .85, p \leq .42$).

Participant Gender. Participant gender effects were found for attributions of failure to both ability and effort ($F(2, 330) = 2.42, p \leq .12$). Male participants rated ability as more important ($m = 5.53$) to failure than effort ($m = 5.29$). Female participants rated effort as more important to failure ($m = 5.16$) than ability ($m = 4.97$), the means are provided in Table 2.

Table 2: Average ratings of importance of ability and effort for failure by participant gender

	Male Participant	Female Participant
Ability	5.53	4.97
Effort	5.29	5.16

Figure 1: Attributions of failure to ability

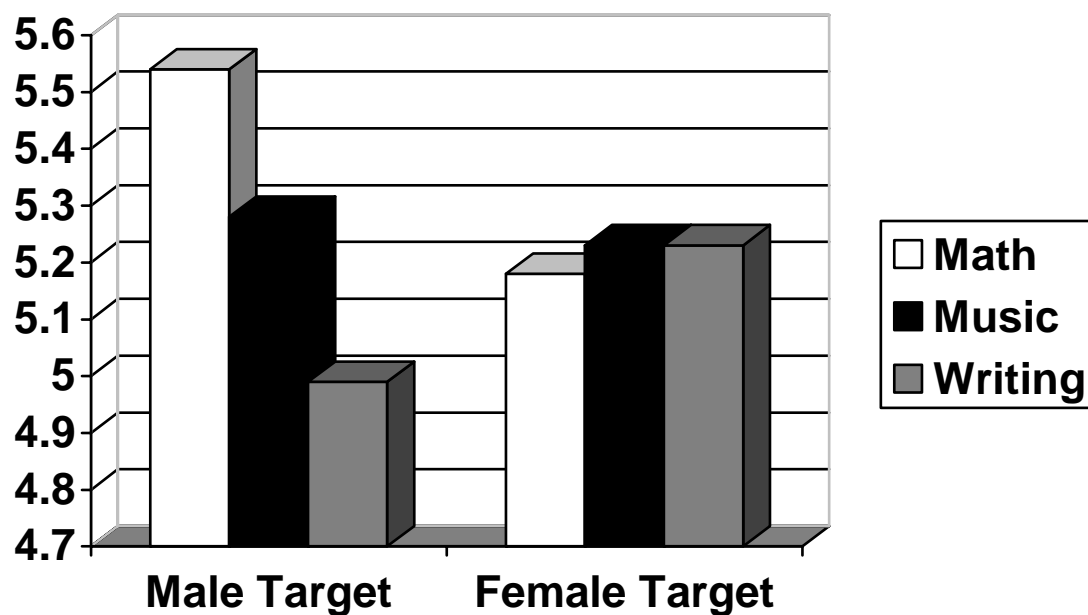


Figure 1: The mean ratings of the importance of ability to failure in all three domains.

Conclusions

Music Ratings

The data support the hypothesis that music, without consideration for instrument, is not perceived as a feminine subject. It seems people generally perceive it as a neutral subject. The results from the comparison of music participants and non-participants suggest that there was no significant difference in their ratings. However, there is a slight trend in the expected direction, with participant ratings being more masculine, and more consensus on the ratings for music participants. What can be concluded from this is that there is something about participating in music that affects the perception of music as masculine or feminine. In the future, this question could be posed to just music participants who have varying levels of experience. This effect may change over time as a person gains more experience in music.

Encouragement

The results of the encouragement ratings were rather surprising. It seems that music is generally not considered a very desirable career goal. The ratings for the two control conditions were exactly the opposite of what was expected, with female targets being more encouraged in math than writing and male targets being more encouraged in writing than math. When looking at ratings by gender of the participant for music, females were more likely to encourage a male target and males were more likely to encourage a female target. One possible explanation for the music ratings is in-group effects. If the participants all considered investment in music to be a bad idea, they may be trying to protect their in-group so that male participants would tell other males not to try it and female participants would do the same for female targets. There could have been social desirability effects in all three domains. The participants may have been aware that the study was interested in gender effects and they wanted to give answers that were not

based on stereotypes and so would be considered more socially acceptable. Social desirability would explain the opposite gender effects that females were encouraged in math by males and males were encouraged in writing by both genders. Another possible explanation is that the students would feel that those trying to pursue a counterstereotypical career needed more encouragement. This would explain why the male participants were so encouraging of the female target in math and why both genders were so encouraging of the male target in writing. However, this explanation does not specifically address the findings in music because the participants saw music as a gender neutral career.

Attributions

Gender of the target student did not produce any of the predicted effects on attributions of ability and effort. Ability and effort attributions were nearly parallel for gender in each of the three domains. It is interesting that ability was seen as most important to failure in music and effort was seen as most important to failure in math. This follows the findings from Bornholt and Moller (2003) that ability is seen as more important than effort in competitive music situations. There was also the tendency for male participants to consider ability more important to failure than female participants. This is important when you consider the fact that there are more male than female music directors at the high school and college level. If ability is considered the most important attribute in music and music teachers think failure indicates a lack of ability, they could convey their ability attributions to the students. Moreover, there is a tendency for boys to have a more optimistic self-concept than girls (Bornholt & Moller, 2003) and they report more confidence in music (Green, 2002). This could mediate the effects of the teacher's attributions in a way that could disadvantage female students. It would be interesting to see how actual music teachers rate these items on actual students. In the classroom setting it would be possible to test

the effects on motivation predicted by teacher expectation research. It would also be possible to see if the participant gender effects occur with real teachers. Data from real students could determine if music directors do convey attributions of failure to a lack of effort and if that does affect female students more than male students. It must be considered that for this experiment a neutral instrument was used to try to detect any general effects of music. The ratings of teachers are not directly predictable from the results in this study, in that they cannot make judgments independent of the instrument the student plays.

Again, a possible reason for the lack of gender effects in the attributions is social desirability. The participants were aware that they were part of a social psychology experiment and those in the all female target condition may have realized that the experiment was looking at gender effects. They would not want to base their answers on the target's gender and that may account for the lack of variability in the results for female targets, especially in the results found for attributions of failure to ability. It was also noticed that the exact meaning of importance to failure was not specified. There could have been two interpretations; that it meant lack of ability or effort was important to failure, or that ability or effort had a smaller or greater effect on failure. For analysis, the first interpretation was used because it seemed most natural and the two interpretations should not have produced qualitatively different results.

Further Research

This study opens up many possible directions for further research. Especially important would be a natural observation study similar to the study in math done by Jussim (1989, Jussim & Eccles 1992). This would bring more relevance to this topic by determining that there is a difference in motivation and future plans between male and female music students. There must be some reason why women are less likely to be professional musicians. It seems likely from

our experience that it stems from the educational system, but more research is needed to establish a connection.

Repeating a similar study using the added variable of masculine or feminine instrument could change the results. If the differences seen in math and writing were simply the result of gender affinity, then it would be expected that a masculine instrument would have a similar pattern to math and feminine instrument would mimic writing. However, some research suggests that negative effects associated with playing a gender “inappropriate” instrument are stronger for males than females (Cramer, Million, & Perreault, 2002). This research was not targeted toward music participants and did not include any information regarding the music experience of the participants. It would be very interesting to see if those with music education experience are more likely to negatively evaluate a female playing an incongruous instrument than what was found in that study.

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Appendix A

Vignettes:

David has been playing cello since sixth grade. He wants to go to music school so that he can eventually play in a professional orchestra, but his parents think he should do something more practical. David has been saving up money to buy a very expensive cello. Now he isn't sure if he should spend the money on the instrument if he may not stay in music. Would you encourage him to buy it?

Chris is a senior in high school. He is trying to decide what to major in when he goes to college. He has always gotten good grades in math and is thinking about pursuing it. His parents just want him to go to a prestigious school and be successful. Chris asks you for advice. Would you encourage him to choose math as his major?

John has written a short story and is very proud of it. The story is very original and all of his friends say it's really good. One of his friends suggested that he should try to get it published and maybe become a writer for a living. John isn't so sure about that and asks you what you think. Would you encourage him to try to publish the story?

Appendix B

Questions:

Please take a moment to imagine that he buys the cello and goes to music school and then goes on to play in a large symphony. How important to his success was each of the following four causes:

How important to his success was: Ability?

How important to his success was: Effort?

How important to his success was: Task Difficulty?

How important to his success was: Luck?

Now imagine that he buys the instrument, but he can't get into a good music program and ends up in a different major. How important to his failure was each of the following four causes:

(repeat as above)